What is claimed is:

[c1] An electromagnetic tomography system for determining properties of a geological formation penetrated by at least one borehole lined with a conductive tubular, comprising:

a transmitter disposed in the at least one borehole and adapted to induce a magnetic field;

a first receiver disposed in the at least one borehole and adapted to detect a magnetic field induced in the conductive tubular by the transmitter; and

a second receiver adapted to detect a magnetic field induced in the geological formation by the transmitter.

[c2] The electromagnetic tomography system of claim 1, wherein the first receiver is disposed at a distance from the transmitter selected so that the first receiver is mainly sensitive to the magnetic field induced in the conductive tubular by the transmitter.

[c3] The electromagnetic tomography system of claim 2, wherein the distance is no more than 0.5 meter.

[c4] The electromagnetic tomography system of claim 1, wherein the second receiver is disposed in the at least one borehole at a distance from the transmitter selected so that the second receiver is primarily sensitive to the magnetic field induced in the geological formation by the transmitter.

[c5] The electromagnetic tomography system of claim 4, wherein the distance between the second receiver and the transmitter is at least 10 meters.

[c6] The electromagnetic tomography system of claim 1, wherein the second receiver is disposed in a second borehole.

[c7] The electromagnetic tomography system of claim 1, further comprising a second transmitter disposed at a distance from the second receiver selected so that the second receiver is mainly sensitive to a magnetic field induced in the conductive tubular by the second transmitter.

[c8] An electromagnetic tomography system for determining properties of a geological formation penetrated by at least one borehole lined with a conductive tubular, comprising:

a first transmitter adapted to induce a magnetic field in the geological formation;

a receiver disposed in the at least one borehole and adapted to detect the magnetic field induced in the geological formation by the first transmitter; and

a second transmitter disposed in the same borehole as the receiver at a distance from the receiver selected so that the receiver is mainly sensitive to a magnetic field induced in the conductive tubular by the second transmitter.

[c9] The electromagnetic tomography system of claim 8, wherein the distance between the receiver and the second transmitter is no more than 0.5 meter.

[c10] The electromagnetic tomography system of claim 8, wherein the first transmitter is disposed in the same borehole as the receiver at a distance selected so that the receiver is primarily sensitive to the magnetic field induced in the geological formation by the first transmitter.

[c11] The electromagnetic tomography system of claim 10, wherein the distance between the receiver and the first transmitter is at least 10 meters.

[c12] The electromagnetic tomography system of claim 8, wherein the first transmitter is disposed in a second borehole.

[c13] An electromagnetic tomography system for determining properties of geological formation penetrated by at least one borehole lined with a conductive tubular, comprising:

a means disposed in the at least one borehole for inducing a magnetic field;

a first means for detecting a magnetic field induced in the conductive tubular, the first means being disposed in the same borehole as the means for inducing the magnetic field; and

a second means for detecting a magnetic field induced in the geological formation.

[c14] A method for determining a conductive tubular correction constant for use in electromagnetic induction tomography in a borehole lined with a conductive tubular, comprising:

generating a magnetic field inside a representative piece of the conductive tubular;

determining a first magnetic field amplitude inside the representative piece of the conductive tubular at a location proximate to a position of the generating the magnetic field;

determining a second magnetic field amplitude outside the representative piece of the conductive tubular; and

deriving the conductive tubular correction constant from a ratio of the first magnetic field amplitude and the second magnetic field amplitude.

[c15] The method of claim 14, wherein the representative piece of the conductive tubular is disposed in a medium having substantially zero conductivity.

[c16] A method for determining a conductive tubular correction constant for use in electromagnetic induction tomography in a borehole lined with a conductive tubular, comprising:

generating a first magnetic field inside a representative piece of the conductive tubular;

determining an amplitude of a first magnetic field inside the representative piece of the conductive tubular at a location proximate to a position of the generating the first magnetic field;

determining an amplitude of a second magnetic field inside the representative piece of the conductive tubular, the second magnetic field being generated outside the representative piece of the conductive tubular; and

deriving the conductive tubular correction constant from a ratio of the first magnetic field amplitude and the second magnetic field amplitude.

[c17] The method of claim 16, wherein the representative piece of the conductive tubular is disposed in a medium having substantially zero conductivity.

[c18] A method for determining properties of a geological formation penetrated by at least one borehole lined with a conductive tubular, comprising:

generating a magnetic field inside a representative piece of the conductive tubular;

determining a first magnetic field amplitude inside the representative piece of the conductive tubular at a location proximate to a position of the generating the magnetic field inside the representative piece of the conductive tubular;

determining a second magnetic field amplitude outside the representative piece of the conductive tubular;

deriving a conductive tubular correction constant from a ratio of the first magnetic field amplitude and the second magnetic field amplitude;

generating a magnetic field in the geological formation from within the at least one borehole;

measuring a reference magnetic field amplitude inside the at least one borehole;

measuring a formation magnetic field amplitude at a distance from a position of the generating the magnetic field in the geological formation selected so that the formation magnetic field amplitude is related to the magnetic field strength in the geological formation;

correcting the reference magnetic field amplitude measurement and the formation magnetic field amplitude measurement using the conductive tubular correction constant; and

deriving a formation property from the corrected reference magnetic field amplitude measurement and the corrected formation magnetic field amplitude measurement.

[c19] The method of claim 18, wherein the measuring a formation magnetic field amplitude comprises measuring inside the at least one borehole.

[c20] The method of claim 18, wherein the selected distance is at least 10 meters.

[c21] The method of claim 18, wherein the measuring a formation magnetic field amplitude in the geological formation comprises measuring from a second borehole.

[c22] The method of claim 21, further comprising repeating the measuring a formation magnetic field amplitude at a plurality of axial positions along the second borehole.

[c23] The method of claim 18, further comprising repeating the generating a magnetic field in the formation at a plurality of axial positions along the at least one borehole.

[c24] The method of claim 18, wherein the deriving a formation property comprises at least one of least square inversion and three-dimensional electromagnetic modeling.

[c25] The method of claim 18, wherein the formation property comprises resistivity.

[c26] The method of claim 18, wherein the generating a magnetic field comprises generating an alternating magnetic field at a selected frequency.

[c27] The method of claim 26, wherein the selected frequency is optimized based on geological formation resistivity and a separation between a position of the generating the magnetic field in the geological formation and a position of the measuring the formation magnetic field amplitude.